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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/375,331	08/17/1999	DAVID ZERYCK	1956/116	4894

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EXAMINER

TARCZA, JOHN D

ART UNIT

PAPER NUMBER

2126

DATE MAILED: 11/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/375,331

Applicant(s)

ZERYCK ET AL.

Examiner

John D Tarcza

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claim 3 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 3 recites the limitation "a device driver", in line 17. The term "a device driver" has already been described in the parent claim.

Claim 3 recites the limitation "a number of device driver stacks", in line 19. The term "a number of device driver stacks" has already been described in the parent claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 6,7,9,11 rejected under 35 U.S.C. 102(e) as being anticipated by Hyder (US Patent 6,233,624).

Referring to claim 6, Hyder teaches registering a device driver (link layer driver) with an operating system device driver registration system (operating system component such as a registry, col. 8 line 61 – col. 9 line 7), and registering the device driver with a layered device driver registration system (figure 5 elements 304/372; col. 10 line 51 – col. 11 line 2).

Referring to claim 7, Hyder teaches adding the device driver to a driver list (registry entry for a driver), and specifying a relative position (providing information necessary to set up dependency relationships, col. 8 lines 66-67) for the device driver within a device driver stack (hierarchy/data flow)

Referring to claims 9 and 11, Hyder teaches inserting and removing the device driver at the specified relative position in the device driver stack (“Additionally, the ability of inserting or removing link layer intermediate drivers or layers...” col. 8, lines 48-51)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10,12 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyder (US Patent 6,233,624 B1)

Referring to claim 10, it would be obvious to one of ordinary skill in the art as to suspending and restart I/O prior to modification of the stack because failing to do so would result in the stack operating improperly during the modification. As for the remaining steps, it would be clearly obvious to find the location where the device driver is to be inserted in the stack prior to inserting it. Furthermore, it is well known in the art that inserting a node into a linked list structure such as a stack comprises binding a new node to an element in the stack, unbinding the node previously bound to said node in the stack, and binding the node previously bound to the new node. It would therefore be obvious to insert a device driver from a device driver stack in this manner because these steps are well known to any stack element insertion.

Referring to claim 12, for the same reasons as in claim 10, it would be obvious to one of ordinary skill in the art to suspend I/O before modifying the stack and restart I/O upon completion of the stack modification. As for the remaining steps, it is well known

to one of ordinary skill in the art that removing an item from a stack involves unbinding an upper element bound to an element to be removed, unbinding the element to be removed from a lower element, and binding the upper element to the lower element. It would therefore be obvious to remove a device driver from a device driver stack in this manner because these steps are well known to any stack element removal.

8. Claims 1-5,8 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyder (US Patent 6,233,624 B1) in view of Petrusha ("Inside the Windows 95 Registry", pages 172-176)

Referring to claim 1, Hyder teaches, in the context of the Windows NT operating system (col. 8, lines 1-5) a layered device driver registration system (figure 5 elements 304/372; col. 10 line 51 – col. 11 line 2) in conjunction with an operating system device driver registration system (operating system component such as a registry, col. 8 line 61 – col. 9 line 7), wherein the layered device driver registration system enables a device driver (link layer device driver) to be associated with one of a number of device driver stacks ("for example, link layer intermediate driver may be linked to a plurality of data flow paths", col. 8, lines 48-59), and to configure the relative position of the device driver within the device driver stack ("installing a link layer intermediate driver involves providing information necessary to set up dependency relationships among the desired drivers in the hierarchy.", col. 8 line 64 – col. 9 line 2).

Hyder does not teach a user making the device driver associations and configuring the relative position. Petrusha teaches (page 35) that a user (user or

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administrator) can modify the contents of the Windows registry by using the registry editor. It would be obvious to one of ordinary skill in the art that a user could associate device drivers and configure their relative position because this configuration information in Hyder's teaching is stored in the registry and a utility is installed on all Windows NT machines that enables the modification of this information.

Referring to claims 2 and 8, Hyder teaches a registry (304/372) that comprises information regarding the relative position of drivers (information necessary to set up dependency relationships) and the driver names (inherent). He also teaches an administrative library (library of functions within abstract interface, col. 10 lines 37-39), though in Hyder's teaching the administrative library is not associated with individual drivers.

Hyder does not provide the details of how information is stored in the registry. Petrusha teaches (page 38-39) that the Windows registry comprises keys that contain value name and value pairs to store information in the registry. It would therefore be obvious that the registry data as taught by Hyder could be stored using keys, value names and values as described by Petrusha, because Petrusha is providing further detail of the registry which is being used by Hyder. Thus Hyder as modified would store necessary data (driver name, relative position) as values within one or more keys or subkeys in the registry. Petrusha also teaches the registry as a single repository for hardware, system software, and application configuration information (page 11, 2nd paragraph). It would therefore be obvious that information stored in a driver file and a driver order file as claimed could equivalently be stored in the registry.

Referring to claim 3, Hyder in view of Petrusha as in the rejection to claim 1 inherently provides a means for each limitation set forth in this claim.

Referring to claims 4 and 5, Hyder teaches "the current system and method can be used in virtually any computer system having external or physical devices that employ software drivers for interfacing to such external devices" (col. 2, lines 49-53). A storage unit, or storage processor for operation in a storage unit as defined in the applicant's disclosure would constitute such a system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Pat. 6,205,492 to Shaw et al. demonstrating interconnecting device drivers

US Pat. 5,339,432 to Crick demonstrating configuring multiple device drivers

US Pat. 5,819,107 to Lichtman et al. demonstrating device driver management

Standish, Thomas: "Data Structures, Algorithms, & Software Principles in C", page 36, demonstrating inserting a node into a linked list.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John D Tarcza whose telephone number is 703-305-8050. The examiner can normally be reached on 8:00 am - 4:30 pm Monday - Friday.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-9731 for regular communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

John D Tarcza
Examiner
Art Unit 2126

jdt
November 4, 2002



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